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Leif Hermansson

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WIGGIN AND DANA LLP
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KWAK, JAE J

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,277	Applicant(s) HERMANSSON ET AL.	
	Examiner JAE KWAK	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 27-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 27-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Amendment

Applicant's newly added claim 29-37 is acknowledged with amendments to claims 1-10, 27-28.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 8, 10, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. (US 2003/0121454) in view of Akahane et al. (US 5,063,257).

Regarding claims 1: Hermansson et al. teaches a chemically bound ceramic material/powdered material (abstract) by reacting binding phases/first and second binder phase of binding agents (abstract). Hermansson et al. teaches addition of another cement binding phase such as fine-grained silicon dioxide/reactive glass (Paragraph 13), and water/a first and second portion of aqueous hydration liquid (paragraph 12). is used in the main binding phase and add aggregate/second non-ceramic binder (Paragraph 14).

Hermansson et al. is silent on the second non-ceramic binder phase such as polycarboxylic acid. However, Akahane et al. teaches dental glass ionomer cement composition comprising carboxylic acid polymer/polycarbonate having molecular weight of 5,000 to 40,000 (abstract) which overlaps the instant claimed molecular weight. Hermansson et al. and Akahane et al. are analogous art because they are both concerned with the same field of endeavor, namely

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dental cement filling materials. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine dental glass ionomer cement composition of Akahane et al. with the chemically bound ceramic material of Hermansson et al. and would have been motivated to prevent early setting reaction of composition which to improves biocompatibility and adhesion properties of dental cement compositions.

Hermansson et al. teaches the first binder phase and a portion of water as set forth above. Since there is nothing in the claim language to distinguish the choosing of the first portion of water from the second portion of water, the first and second portion can be arbitrarily chosen from the system of Hermansson. Hermansson et al. also teaches an excess of water can be used (Paragraph 25). Therefore, it is possible to arbitrarily define the first portion of water to meet the limitation of the ratio of the first portion of aqueous hydration liquid to the first binder phase is 0.2-0.45. Likewise, it is possible to arbitrarily define the second binder phase of water in Akahane to meet the limitations of the second binder phase of aqueous hydration liquid to reactive glass is 0 to 0.45. Also, it is possible to arbitrarily define the second binder water to reactive glass limitation to meet the limitations of the second portion of water to reactive glass is 0.2 and 0.45.

Hermansson et al. does not teach hydration reaction between the first binder phase (c) and second binder phase. However with Akahane et al., the carboxylic acid polymer and all of the components are present in the composition it is implicit that the composition would have this hydration reaction property. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the

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Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with these properties.

Regarding claim 8: Hermansson et al. teaches inert filler such as bonded ceramics for example hydrated aluminate (paragraph 52).

Regarding claim 10: While Hermansson et al. does not directly teach that the system yield strength above 5MPa, since all of the components are present in the composition it is implicit that the composition would have these properties. If it is applications' position that would not be the case; (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with these properties.

Regarding claim 35: While Hermansson et al. does not teach that the pre-hydrated chemical bonded ceramics are same as first binder phase, but Hermansson et al. inherently discloses binding agents/calcium aluminate hydrates are pre-hydrated chemical bonded ceramics.

3. Claims 2-4, 6, and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. in view of Akahane et al. as applied to claim 1 above and in further view of Jia et al. (US 2003/0125444 A1).

Hermansson et al. and Akahane et al. teach the basic claimed composition as set forth above.

Regarding claims 2-3, 29, and 30: Not taught is initial pH of system. However, Jia et al. teaches an aqueous or organic solution of ceramic filler under acidic conditions (paragraph 39) from pH 1 to 4 (Paragraph 41). Hermansson et al. and Jia et al. are combinable because they are

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both concerned with the same field of endeavor, namely a dental filler composition. At the time of invention a person having ordinary skill in the art would have found it obvious to use acidic conditions of Jia et al. to control the pH of the chemically bonded ceramic material and would have been motivated to do so because of such desirable properties as improving bonding between ceramic fillers and polyacrylic acid.

Regarding claim 4, 31: While Hermansson et al. does not directly teach a pH greater than 7 or abase is comprised in the system, but teaches calcium aluminate is a basic material (Paragraph 18). Therefore it is implicit that the composition would have this property. If it is applications' position that would not be the case; (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with these properties.

Regarding claim 6: Hermansson et al. teaches porous material such as aluminum oxide which reads on as a porous material. (Paragraph 20).

Regarding claim 32: Hermansson et al. teaches that the porous aggregate/porous material having pore sizes between 0.1-5 μm (Paragraph 20) which reads on the nano/meso-pore structure.

4. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. in view of Akahane et al. in view of Jia et al. as applied to claim 6 above and in further view of Pflug et al. (US 6,399,037)

Regarding claim 33: Hermansson et al. is silent on specific porous material such as zeolite type. However, Pflug et al. teaches zeolite nanofiller (Col. 3 line 23). Hermansson et al.

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and Pflug et al. are combinable because they are both concerned with the same field endeavor, namely a composition comprising inorganic particles. At the time of invention a person having ordinary skill in the art would have found it obvious to substitute zeolite filler of Pflug et al. as porous aggregates of Hermansson et al and would have been motivated to do so because of such desirable properties such as to improve mechanical, compression strength, and bond strength of the inorganic material composition.

5. Claims 5, 28, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. in view of Akahane et al. as applied to claim 1 above and in further view of Ario et al. (US 2003/0114554 A1).

Regarding claims 5: Hermansson et al. and Akahane et al. teach the basic claimed composition as set forth above. Not taught is additional acid in the system. However, Ario et al. teaches dental resin cement materials comprising acid functionality (abstract) with generate the acid (Paragraph 23) conditions such as carboxylic acids (paragraph 23). Hermansson et al. and Ario et al. are combinable because they are both concerned with the same field endeavor, namely a dental restorative cement composition comprising acid functionality. At the time of invention a person having ordinary skill in the art would have found it obvious to use acid functional taught by Ario et al. in the chemically bonded ceramic material of Hermansson et al. and would have been motivated to do so because of such desirable properties such as acidifying intermediate dental filler compositions to improve bonding between phases and hardness of final dental cement product.

Regarding claim 28: While Hermansson et al. does not directly teach a teaches porous material such as aluminum oxide (paragraph 52).

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Regarding claim 36: Hermansson et al. teaches that the porous aggregate/porous material having pore sizes between 0.1-5 μm (Paragraph 20) which reads on the nano/meso-pore structure.

6. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. in view of Akahane et al. in view of Ario et al. as applied to claim 5 above and in further view of Pflug et al. (US 6,399,037)

Regarding claim 37: Hermansson et al. is silent on specific porous material such as zeolite type. However, Pflug et al. teaches zeolite nanofiller (Col. 3 line 23). Hermansson et al. and Pflug et al. are combinable because they are both concerned with the same field endeavor, namely a composition comprising inorganic particles. At the time of invention a person having ordinary skill in the art would have found it obvious to substitute zeolite filler of Pflug et al. as porous aggregates of Hermansson et al and would have been motivated to do so because of such desirable properties such as to improve mechanical, compression strength, and bond strength of the inorganic material composition.

7. Claims 7, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. in view of Akahane et al. as applied to claim 1 above and in further view of Haw (US 3,409,578)

Regarding claims 7,34: Hermansson et al. and Akahane et al. teach the basic claimed composition as set forth above. Hermansson et al. is silent on first binder phase are coated with glyconate. However, Hwa teaches sequestering agents such as glyconate (Col. 5 line 48). Hermansson et al. and Hwa are analogous art because they are both concerned with the same

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field endeavor, namely an inorganic cement compositions comprising metal ions. At the time of invention a person having ordinary skill in the art would have found it obvious to combine glyconate of Hwa with the chemically bonded ceramic material system of Hermansson et al. and would have been motivated to do so because of such desirable properties such as to remove surface hardening metal ions.

8. Claims 9, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. in view of Akahane et al. as applied to claim 1 above and in further view of Jia (US 2003/0083400 A1)

Regarding claim 9: Not taught is zinc oxide forming zinc phosphate. Jia (US 2003/0083400 A1) teaches dental restorative compositions (Paragraph 12) comprising phosphoric acids (Paragraph 21) and zinc phosphate base cement (Table 3). Hermansson et al. and Jia are analogous art because they are both concerned with the same field endeavor, namely a dental restorative cement composition comprising multi-component system. At the time of invention a person having ordinary skill in the art would have found it obvious to use the Zinc Phosphate material taught by Jia 715' in the chemically bonded ceramic material system of Hermansson et al. and would have been motivated to do so because of such desirable properties such as improving mechanical strength and wear resistance of dental cement composition.

Regarding claim 27: Hermansson et al. teaches a chemically bound ceramic material/ powdered material (abstract) by reacting binding phases/first and second binder phase of binding agents (abstract). Hermansson et al. teaches addition of another cement binding phase such as fine-grained silicon dioxide/reactive glass (Paragraph 13), and water/a first and second portion of aqueous hydration liquid (paragraph 12) , and calcium aluminate hydrates/reactive glass

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(Paragraphs 12, 14) is used in the main binding phase and add aggregate/second non-ceramic binder (Paragraph 12, 14, 35).

Hermansson et al. is silent on first binder phase comprising the phase of polyacrylate polymer. However, Jia (US 2003/0083400 A1) teaches dental restorative compositions comprising acrylate resin/polyacrylate (Paragraph 34). At the time of invention a person having ordinary skill in the art would have found it obvious to use the acrylate resin taught by Jia 715' in the chemically bonded ceramic material system of Hermansson et al. and would have been motivated to do so because of such desirable properties such as improving mechanical strength and wear resistance of dental cement composition.

Response to Arguments

Applicant's arguments filed July 13, 2008 with respect to claims 1-10, 27-28 have been fully considered but are moot in view of the new ground(s) of rejection, and they are not persuasive.

A) Applicant's argument that Hermansson et al. does not teach a system for a chemically bonded material is not persuasive, because argument toward describe an intended use is not claimed in the instant application and has little patentable weight since a system refers to the compositions.

B) Applicant's argument that Hermansson et al. does not teach polycarboxylic acid with molecular weight is newly added to the claim and has been responded to the above rejection (See Paragraph 2 above).

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Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAE KWAK whose telephone number is (571)270-7339. The examiner can normally be reached on Monday to Friday 8:30 A.M. EST 5:30 P.M. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

J.K.